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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,947	10/21/2003	Masayuki Fujimoto	038849.52804US	3296
23911	7590	12/15/2005	EXAMINER	
CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/688,947	FUJIMOTO, MASAYUKI	
	<b>Examiner</b>	<b>Art Unit</b>	
	Hai C. Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 9 and 10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form. The following limitations "a scan start position detector" and "the scan start position detector comprises a photodiode" recited in claims 9 and 10, respectively, have already been included in the parent claim 1.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 2 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyamoto et al. (U.S. 5,900,961).

Miyamoto et al. discloses a scanning optical device comprising a laser scanning unit, wherein the laser scanning unit comprises a frame body (optical casing 1), a semiconductor laser (laser unit 202) for emitting a laser beam, the semiconductor laser being installed inside the frame body, a polygon mirror (203) for causing the laser beam

to scan on a photosensitive drum (23), a motor (203) for rotating the polygon mirror, the motor being placed inside the frame body and having the polygon mirror mounted (Fig. 7B), and a circuit board (Fig. 7A) for packaging two circuits of a semiconductor laser drive circuit for controlling the driving of the semiconductor laser and a motor drive circuit for controlling the driving of the motor (the IC device 208 being an integrated circuit device, which has dual function of controlling the laser unit 202 and the polygon motor 203) (col. 4, lines 50-56), the circuit board being provided in an area a predetermined distance apart from an area where the motor is placed in the frame body (the circuit board being positioned outside the optical casing 1 separate from the laser unit and the motor by an opening of the cover 212) (col. 4, lines 61-67).

Miyamoto et al. further teaches the scan start position detector comprising a photodiode (the horizontal synchronization signal detecting unit 207 including a photodiode) (col. 4, lines 41-45).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al.

Although Miyamoto et al. does not elaborate on the mounting assembly of the polygon motor in the third embodiment, Miyamoto et al. does however teach the polygon motor being mounted to the optical casing (1) via a base plate (2) through a recess made in an extension of the wiring board (11) as shown in the first and second embodiments, the base plate having exclusively a motor mounting function (col. 2, lines 36-56).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the third embodiment of Miyamoto et al. to include the mounting support disposed between the polygon motor and the optical casing to support the polygon motor. The motivation for doing so would have been to provide a sturdy support for the polygon mirror as well as to suppress vibration generated during the rotation of the polygon mirror.

6. Claims 3, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Yoshino (JP 7-178957).

Miyamoto et al. discloses all the basic limitations of the claimed invention including the scan start position detector comprises a photodiode (the horizontal synchronization signal detecting unit 207 including a photodiode) (col. 4, lines 41-45), but except for the circuit board being made of paper phenol.

Yoshino discloses a laser printer, which includes a simple low cost electric circuit substrate (14) made of paper phenol on which a circuit pattern (32) is formed including a drive IC for driving a semiconductor laser.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use paper phenol for the circuit board in the device of Miyamoto et al. as taught by Yoshino. The motivation for doing so would have been to provide a low cost, small size and simple circuit board structure, which further prevents any short-circuit event as suggested by Yoshino at paragraph [0025].

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Suzuki et al. (JP 9-15521).

Miyamoto et al. discloses all the basic limitations of the claimed invention except for the laser being adjustable.

Suzuki et al. discloses an optical scanning device having a laser light source device mounted on the optical box (35) and being provided with a rotatable mechanism (37) for adjusting the position of the light emitting points of the laser light source (26) so as to adjust the pitch of the laser beams in the sub-scanning direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the adjustable mechanism for adjusting the laser beam pitch in the device of Miyamoto et al. as taught by Suzuki et al. the motivation for doing so would have been to allow the laser printer to print at a plurality of resolutions.

8. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Asada et al. (U.S. 6,552,987).

Miyamoto et al. discloses all the basic limitations of the claimed invention except for the flexible cables with a plurality of wires.

However, it is well known in the art to use a flexible cable to electrically interconnect different electronic parts within the recording apparatus as evidenced by Asada et al., which teaches using a flexible cable (6) of multiple wires for connecting the laser drive circuit (1) with the various electronic components to carry the necessary signals to drive the laser light source.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the flexible cable into the device of Miyamoto et al. The motivation for doing so would have been to provide a flexible interconnection, which simultaneously carries multiple signals to different electronic components.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Asada et al., as applied to claims 1, 6 above, and further in view of Ono et al. (JP 2001-337291).

Miyamoto et al., as modified by Asada et al., discloses all the basic limitations of the claimed invention except for the hole in the frame body through which the flexible cable is disposed for connecting the circuit board and the motor.

Ono et al. discloses an optical writing unit having a drive circuit board (113) for driving the polygon motor, the drive circuit board being disposed external to the optical housing (114) wherein a hole is provided in the frame of the optical housing to allow the

electric wire rod (120) to reach the polygon mirror forming a connection between the drive circuit board and the polygon mirror (English translation, paragraph [0009]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a hole in the frame body of the optical housing of the device of Miyamoto et al. as taught by Ono et al. for the purpose of allowing the external drive circuit board to electrically connect to the polygon mirror encased in the optical housing.

10. Claims 1 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Yoshino, Suzuki et al. And Asada et al.

Miyamoto et al. discloses all the basic limitations of the claimed invention (please refer to the rejection of the limitations stated in paragraphs 3 and 5 above) except for the circuit board being made of paper phenol.

Yoshino discloses a laser printer, which includes a simple low cost electric circuit substrate (14) made of paper phenol on which a circuit pattern (32) is formed including a drive IC for driving a semiconductor laser.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use paper phenol for the circuit board in the device of Miyamoto et al. as taught by Yoshino. The motivation for doing so would have been to provide a low cost, small size and simple circuit board structure, which further prevents any short-circuit event as suggested by Yoshino at paragraph [0025].

Miyamoto et al. also fails to teach the laser being adjustable.



Suzuki et al. discloses an optical scanning device having a laser light source device mounted on the optical box (35) and being provided with a rotatable mechanism (37) for adjusting the position of the light emitting points of the laser light source (26) so as to adjust the pitch of the laser beams in the sub-scanning direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the adjustable mechanism for adjusting the laser beam pitch in the device of Miyamoto et al. as taught by Suzuki et al. the motivation for doing so would have been to allow the laser printer to print at a plurality of resolutions.

Miyamoto et al. also fails to teach the flexible cables with a plurality of wires.

However, it is well known in the art to use a flexible cable to electrically interconnect different electronic parts within the recording apparatus as evidenced by Asada et al., which teaches using a flexible cable (6) of multiple wires for connecting the laser drive circuit (1) with the various electronic components to carry the necessary signals to drive the laser light source.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the flexible cable into the device of Miyamoto et al. The motivation for doing so would have been to provide a flexible interconnection, which simultaneously carries multiple signals to different electronic components.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Yoshino, Suzuki et al. and Asada et al., as applied to claim 1 above, and further in view of Ono et al.

Miyamoto et al., as modified, discloses all the basic limitations of the claimed invention except for the hole in the frame body through which the flexible cable is disposed for connecting the circuit board and the motor.

Ono et al. discloses an optical writing unit having a drive circuit board (113) for driving the polygon motor, the drive circuit board being disposed external to the optical housing (114) wherein a hole is provided in the frame of the optical housing to allow the electric wire rod (120) to reach the polygon mirror forming a connection between the drive circuit board and the polygon mirror (English translation, paragraph [0009]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a hole in the frame body of the optical housing of the device of Miyamoto et al. as taught by Ono et al. for the purpose of allowing the external drive circuit board to electrically connect to the polygon mirror encased in the optical housing.

With regard to Applicant's argument related to the limitation in claim 4, although Miyamoto et al. does not elaborate on the mounting assembly of the polygon motor in the third embodiment, Miyamoto et al. does however teach the polygon motor being mounted to the optical casing (1) via a base plate (2) through a recess made in an extension of the wiring board (11) as shown in the first and second embodiments, the base plate having exclusively a motor mounting function (col. 2, lines 36-56). Therefore,

it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the third embodiment of Miyamoto et al. to include the mounting support disposed between the polygon motor and the optical casing to support the polygon motor. The motivation for doing so would have been to provide a sturdy support for the polygon mirror as well as to suppress vibration generated during the rotation of the polygon mirror.

### ***Response to Arguments***

12. Applicant's arguments filed 29/07/05 have been fully considered but they are not persuasive.

Applicant argues that Miyamoto et al. "does not disclose a circuit board for packaging two circuits of a semiconductor laser drive circuit for controlling of the semiconductor laser and a motor drive circuit for controlling the driving of the motor". The examiner respectfully disagrees. The Applicant also points to the drive circuit 10 in Figs 3-6, which is not the feature used in the rejection since the examiner has clearly pointed to the drive circuit board 211 of Fig. 7A in his rejection of claim 2. In fact, Miyamoto discloses in Fig. 7A a single drive circuit board (211) containing an integrated circuit device (208) having dual function of driving the laser unit (202) and controlling the driving the polygon motor (203) (col. 4, lines 50-56). It is also understood that in order to carry out the dual function, the drive circuit board also includes a whole separate sets of electric parts tailored to each of the above mentioned functions, such as resistors, capacitors, and wiring patterns (e.g., electric components 209, and respective checking

terminals 214-216). In other words, the drive circuit board packages two distinct circuits for controlling the laser and the polygon motor while providing a single processing means.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM  
PRIMARY EXAMINER  
December 8, 2005